UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/559,386	05/24/2006	Timo Surakka	108800-00007	4809

4372 7590 12/16/2009	EXAMINER
ARENT FOX LLP	HOANG, SON T
1050 CONNECTICUT AVENUE, N.W.	
SUITE 400	

ART UNIT	PAPER NUMBER
2165	

NOTIFICATION DATE	DELIVERY MODE
12/16/2009	ELECTRONIC

WASHINGTON, DC 20036

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

DCIPDocket@arentfox.com
IPMatters@arentfox.com
Patent_Mail@arentfox.com

	Application No.	Applicant(s)
Office Action Summary	10/559,386	SURAKKA ET AL.
	Examiner	Art Unit
	SON T. HOANG	2165

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>03</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>03 September 2009</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-5 and 7-31</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-5 and 7-31</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>06 December 2005</u> is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☒ All   b) ☐ Some *   c) ☐ None of:

      1. ☒ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1.   A request for continued examination under 37 CFR 1.114, including the fee set

forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this

application is eligible for continued examination under 37 CFR 1.114, and the fee set

forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action

has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on

September 3, 2009 has been entered.

Response to Amendment

2.   **Claims 1**, **21**, and **24**-**26** are amended.

        Claim 6 is canceled.

        Claims 1-**5**, and **7**-**31** are pending.

Response to Arguments

3.   Objection to **claim 1** is withdrawn in view of Applicant's amendment.

4.   Applicant's arguments with respect to the 35 U.S.C. 103(a) rejections of the

pending claims have been fully but are moot in view of the new grounds of rejections

presented hereon.

Claim Objections

5.   **Claims 7–12** are objected to because of the following informalities: each of the

claims directly or indirectly depends on canceled **claim 6**. Appropriate correction is

required.

6.   **Claims 21**, **25**, **29**, and **31** are objected since each claim has no distinction

between a claim's preamble and claim's body. Applicant is suggested to at least include

a colon (:) at the end of each claim's preamble and at least an indentation to separate

claim's body.

Claim Rejections - 35 USC § 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

8.   **Claims 1-5**, **7**, **9**, and **13-31** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Borkovsky et al. *(Pat. No. US 7,440,941, filed on February 10,* 2003;

hereinafter Borkovsky) in view of Toner et al. (*Pub. No. US 2004/0024760, filed on July*

31, 2002; hereinafter Toner), and further in view of Church (*Pat. No. US 5,572,423,*

published on November 5, 1996).

Regarding **claim 1**, <u>Borkovsky</u> clearly shows and discloses a method for

tolerating writing variations in input data when processing a data record for finding a

counterpart in a reference data set (*Abstract*), the method comprising the steps of:

determining, by a processor, a value of a data field, the data field representing an

identifier (*In block 102, a request is received. The request is to search for files that*

match a search query. The request may be to search for files that contain several

specific words, [Column 3, Lines 47-50]),

determining from a set of predetermined identifier values at least one synonym

candidate for the value of the data field (*In block 702, a set of candidate alternative*

spellings is established. For example, the set of candidate alternative spellings may

include spellings that were selected by a spelling checking routine and/or a routine that

selects synonyms of received spellings. The set of candidate alternative spellings may

include spellings that were determined, based on a set of rules and other

determinations such as those described above, to be alternative spellings that could be

presented to a user, [Column 4, Lines 2-11])),

determining if a synonym candidate and the value of the data field fulfill a

predetermined synonym acceptance criterion based on at least one quality parameter

(*In block 306, based on a set of one or more rules that weigh the frequency of*

occurrences of files that contain the particular spelling against the frequency of

occurrences of files that contain the alternative spelling, it is determined whether to

present the alternative spelling to a user, [Column 6, Lines 36-45]), and

if the predetermined synonym acceptance criterion is fulfilled, associating the

value of the data field and the synonym candidate as synonyms and automatically

updating a synonym set representing known writing variations for the identifier in a

computer readable database by adding the value of the data field to the synonym set

without intervention of a user before searching for a counterpart (*the set of candidate*

alternative spellings may include spellings that were selected by a spelling checking

routine and/or a routine that selects synonyms of received spellings, [Column 11, Lines

54-55]. *The search engine may confidently add the spelling "Lincoln" to the dictionary*

file and omit the spelling "Lincon" from the dictionary file, [Column 11, Lines 62-65]),

searching for the counterpart for the data record by comparing the value of the

data field to entries of the reference data set and/or the synonym set after the step of

determining if the predetermined synonym acceptance criterion is fulfilled (*The*

alternative spelling may then be presented to the user who submitted the original

request, to allow the user to perform a modified search based on the alternative

spelling, [Column 2, Lines 33-36]), wherein if the synonym set was updated, said

comparison to the synonym set comprises comparison to the updated synonym set in

the computer readable database (*the set of candidate alternative spellings may include*

spellings that were selected by a spelling checking routine and/or a routine that selects

synonyms of received spellings, [Column 11, Lines 54-55]. *The search engine may*

confidently add the spelling "Lincoln" to the dictionary file and omit the spelling "Lincon"

from the dictionary file, [Column 11, Lines 62-65]. *It is quite inherent that later searches*

with similar input query would then also be compared with the newly updated dictionary file).

Toner discloses the data field is from a record (*Users select whether they wish to use a single Suspect name at a time, manually entered by the keyboard, or to use an existing file containing a list of Suspect names*, [0094]).

It would have been obvious to an ordinary person skilled in the art at the time of the invention was made to incorporate the teachings of Toner with the teachings of Borkovsky for the purpose of resolving variations in spellings and representations for names with foreign origins that may be spelt in any number of ways ([0015] of Toner).

Church discloses said at least one quality parameter takes into account writing variations that are evaluated based on differences in the value of the data field and the synonym candidate (*a second probability function, Pr(typo/correction), is also derived for each correction candidate and reflects the probability of occurrence of the particular typographical modification (i.e., deletion, insertion, reversal or substitution) used to generate the misspelled word from the candidate expression*, [Column 3, Lines 60-64]. *See further Table C in* [Column 4]).

It would have been obvious to an ordinary person skilled in the art at the time of the invention was made to incorporate the teachings of Church with the teachings of Borkovsky, as modified by Toner, for the purpose of correcting spelling errors in text wherein candidate expressions for replacing a misspelled word are assigned probability functions ([Abstract] of Church).

Regarding **claim 2**, Borkovsky further discloses the at least one synonym candidate is determined using a candidate selection criterion depending at least on the value of the data field and on a synonym candidate (*In block 702, a set of candidate alternative spellings is established. For example, the set of candidate alternative spellings may include spellings that were selected by a spelling checking routine and/or a routine that selects synonyms of received spellings. The set of candidate alternative spellings may include spellings that were determined, based on a set of rules and other determinations such as those described above, to be alternative spellings that could be presented to a user,* [Column 4, Lines 2-11])).

Regarding **claim 3**, Toner further discloses the candidate selection criterion takes into account how similar a synonym candidate and the value of the data field sound (*The rules employed take into account the original sounds or pronunciations of the letters, eliminating double letters, and looking for special patterns,* [0062]).

Regarding **claim 4**, Toner further discloses the candidate selection criterion specifies that at least a predetermined part of the value of the data field is identical to a predetermined part of a synonym candidate (*a probabilistic search algorithm is used that matches strings according to the length and number of string fragments shared by the two strings,* [0062]).

Regarding **claim 5**, Borkovsky further discloses the candidate selection criterion takes into account also a further data field of the data record, said further data field

representing a second identifier (*a search engine could receive a search request for*

"Abraham Lincon", [Column 11, Lines 55-56]).

Regarding **claim 7**, <u>Church</u> further discloses at least one quality parameter takes

into account <u>at least</u> one of the following quantities: a number of changes required for

converting the value of the data field to be identical to a synonym candidate; a

proportion of identical characters in the value of the data field and in a synonym

candidate; and a difference between the length of the value of the data field and the

length of a synonym candidate (*a second probability function, Pr(typo/correction), is*

also derived for each correction candidate and reflects the probability of occurrence of

the particular typographical modification (i.e., deletion, insertion, reversal or substitution)

used to generate the misspelled word from the candidate expression, [Column 3, Lines

60-64]. *See further Table C in* [Column 4]).

Regarding **claim 9**, <u>Toner</u> further discloses the proportion of identical characters

takes into account the order of the characters (*a probabilistic search algorithm is used*

that matches strings according to the length and number of string fragments shared by

the two strings, [0062]).

Regarding **claim 13**, <u>Borkovsky</u> further discloses a method, wherein the search

for the counterpart involves comparison of the value of the data field to a synonym set

relating to the identifier, members of said synonym set referring to respective

predetermined identifier values, and when the predetermined synonym acceptance

criterion is fulfilled, the value of the data field is added to the synonym set as a member

referring to the synonym associated with the value of the data field before the search for

the counterpart (*the set of candidate alternative spellings may include spellings that*

were selected by a spelling checking routine and/or a routine that selects synonyms of

received spellings, [Column 11, Lines 54-55]. *The search engine may confidently add*

the spelling "Lincoln" to the dictionary file and omit the spelling "Lincon" from the

dictionary file, [Column 11, Lines 62-65]. *It is quite inherent that later searches with*

similar input query would then also be compared with the newly updated dictionary file).

Regarding **claim 14**, Borkovsky further discloses wherein determining the at

least one synonym candidate is discarded, if a predetermined discard criterion is fulfilled

(*Figures 9A-9B*).

Regarding **claim 15**, Toner further discloses the predetermined discard criterion

specifies that the value of the data field is identical to one of the predetermined identifier

values (*see the example of permutation process of name components in Figure 6*).

Regarding **claim 16**, Borkovsky further discloses the search for the counterpart

involves the synonym set and the predetermined discard criterion specifies that the

value of the data field is at least one of the following: one of the predetermined identifier

values, and a member of the synonym set (*the set of candidate alternative spellings*

may include spellings that were selected by a spelling checking routine and/or a routine

that selects synonyms of received spellings, [Column 11, Lines 54-55]. *The search*

engine may confidently add the spelling "Lincoln" to the dictionary file and omit the

spelling "Lincon" from the dictionary file, [Column 11, Lines 62-65]. *It is quite inherent*

that later searches with similar input query would then also be compared with the newly

updated dictionary file).

Regarding **claim 17**, <u>Borkovsky</u> further discloses the predetermined discard

criterion takes into account a value of a second data field in the data record (*a search*

engine could receive a search request for "Abram Lincon", [Column 11, Lines 56-57]).

Regarding **claim 18**, <u>Borkovsky</u> further discloses information indicating the at

least one synonym associated with the value of the data field is added to the data

record (*the set of candidate alternative spellings may include spellings that were*

selected by a spelling checking routine and/or a routine that selects synonyms of

received spellings, [Column 11, Lines 54-55]. *The search engine may confidently add*

the spelling "Lincoln" to the dictionary file and omit the spelling "Lincon" from the

dictionary file, [Column 11, Lines 62-65]. *It is quite inherent that later searches with*

similar input query would then also be compared with the newly updated dictionary file).

Regarding **claim 19**, <u>Borkovsky</u> further discloses a method, wherein a copy of

the data record is made for each synonym associated with the value of the data field

(*searches for sets of multiple spellings may be performed*, [Column 12, Lines 54-55]).

Regarding **claim 20**, <u>Toner</u> further discloses a method, wherein the identifier

relates to a name of one of the following: a geographical entity, a person and an

organization (*compare the search query with the Name Database*, [0030]).

Regarding **claim 21**, <u>Borkovsky</u> clearly shows and discloses a method of

processing a synonym set stored in a computer readable database to tolerate writing

variation in input data when searching counterparts in a reference data set for data

records, a data field representing an identifier, members of the synonym set being first

identifier values and referring to respective second identifier values, the second

identifier values being predetermined identifier values, and said searching for a

counterpart involving comparison of a value of the data field to the synonym set

(*Abstract*), the method comprising the steps of

determining, by a processor, among the predetermined identifier values at least

one synonym candidate relating to the value of the data field (*In block 702, a set of*

candidate alternative spellings is established. For example, the set of candidate

alternative spellings may include spellings that were selected by a spelling checking

routine and/or a routine that selects synonyms of received spellings. The set of

candidate alternative spellings may include spellings that were determined, based on a

set of rules and other determinations such as those described above, to be alternative

spellings that could be presented to a user, [Column 4, Lines 2-11])), and

if the value of the data field and a synonym candidate fulfill a predetermined

synonym acceptance criterion based on at least one quality parameter (*In block 306,*

based on a set of one or more rules that weigh the frequency of occurrences of files that

contain the particular spelling against the frequency of occurrences of files that contain

the alternative spelling, it is determined whether to present the alternative spelling to a

user, [Column 6, Lines 36-45]), automatically adding before searching for a counterpart

for a data record from the synonym set the value of the data field to the synonym set in

the computer readable database as a member referring to the synonym candidate

without intervention of a user (*the set of candidate alternative spellings may include spellings that were selected by a spelling checking routine and/or a routine that selects synonyms of received spellings*, [Column 11, Lines 54-55]. *The search engine may confidently add the spelling "Lincoln" to the dictionary file and omit the spelling "Lincon" from the dictionary file*, [Column 11, Lines 62-65]),

Toner discloses the data field is from a record (*Users select whether they wish to use a single Suspect name at a time, manually entered by the keyboard, or to use an existing file containing a list of Suspect names*, [0094]).

It would have been obvious to an ordinary person skilled in the art at the time of the invention was made to incorporate the teachings of Toner with the teachings of Borkovsky for the purpose of resolving variations in spellings and representations for names with foreign origins that may be spelt in any number of ways ([0015] of Toner).

Church discloses said at least one quality parameter takes into account writing variations that are evaluated based on differences in the value of the data field and the synonym candidate (*a second probability function, Pr(typo/correction), is also derived for each correction candidate and reflects the probability of occurrence of the particular typographical modification (i.e., deletion, insertion, reversal or substitution) used to generate the misspelled word from the candidate expression*, [Column 3, Lines 60-64]. *See further Table C in* [Column 4]).

It would have been obvious to an ordinary person skilled in the art at the time of the invention was made to incorporate the teachings of Church with the teachings of

Borkovsky, as modified by Toner, for the purpose of correcting spelling errors in text wherein candidate expressions for replacing a misspelled word are assigned probability functions ([Abstract] of Church).

Regarding **claim 22**, Borkovsky further discloses the synonym set is empty before adding the value of the data field to the synonym set (*the set of candidate alternative spellings may include spellings that were selected by a spelling checking routine and/or a routine that selects synonyms of received spellings*, [Column 11, Lines 54-55]. *The search engine may confidently add the spelling "Lincoln" to the dictionary file and omit the spelling "Lincon" from the dictionary file*, [Column 11, Lines 62-65]. *It is quite inherent that later searches with similar input query would then also be compared with the newly updated dictionary file*).

Regarding **claim 23**, Borkovsky further discloses a method, wherein the synonym set contains at least one member before adding the value of the data field to the synonym set (*the set of candidate alternative spellings may include spellings that were selected by a spelling checking routine and/or a routine that selects synonyms of received spellings*, [Column 11, Lines 54-55]. *The search engine may confidently add the spelling "Lincoln" to the dictionary file and omit the spelling "Lincon" from the dictionary file*, [Column 11, Lines 62-65]. *It is quite inherent that later searches with similar input query would then also be compared with the newly updated dictionary file*).

Regarding **claim 24**, Borkovsky further discloses a computer program embodied in a computer-readable record medium, the computer-readable record medium

including program instructions for causing a computer to perform a method for

processing a data record for finding a counterpart in a reference data set (*Figure 10*),

the method comprising the steps of:

determining, by a processor, a value of a data field, the data field representing an

identifier (*In block 102, a request is received. The request is to search for files that*

match a search query. The request may be to search for files that contain several

specific words, [Column 3, Lines 47-50]),

determining from a set of predetermined identifier values at least one synonym

candidate for the value of the data field (*In block 702, a set of candidate alternative*

spellings is established. For example, the set of candidate alternative spellings may

include spellings that were selected by a spelling checking routine and/or a routine that

selects synonyms of received spellings. The set of candidate alternative spellings may

include spellings that were determined, based on a set of rules and other

determinations such as those described above, to be alternative spellings that could be

presented to a user, [Column 4, Lines 2-11])),

determining if a synonym candidate and the value of the data field fulfill a

predetermined synonym acceptance criterion based on at least one quality parameter

(*In block 306, based on a set of one or more rules that weigh the frequency of*

occurrences of files that contain the particular spelling against the frequency of

occurrences of files that contain the alternative spelling, it is determined whether to

present the alternative spelling to a user, [Column 6, Lines 36-45]), and

if the predetermined synonym acceptance criterion is fulfilled, associating the

value of the data field and the synonym candidate as synonyms and automatically

updating a synonym set representing known writing variations for the identifier in a

computer readable database by adding the value of the data field to the synonym set

without intervention of a user before searching for a counterpart (*the set of candidate*

alternative spellings may include spellings that were selected by a spelling checking

routine and/or a routine that selects synonyms of received spellings, [Column 11, Lines

54-55]. *The search engine may confidently add the spelling "Lincoln" to the dictionary*

file and omit the spelling "Lincon" from the dictionary file, [Column 11, Lines 62-65]),

searching for the counterpart for the data record by comparing the value of the

data field to entries of the reference data set and/or the synonym set after the step of

determining if the predetermined synonym acceptance criterion is fulfilled (*The*

alternative spelling may then be presented to the user who submitted the original

request, to allow the user to perform a modified search based on the alternative

spelling, [Column 2, Lines 33-36]), wherein if the synonym set was updated, said

comparison to the synonym set comprises comparison to the updated synonym set in

the computer readable database (*the set of candidate alternative spellings may include*

spellings that were selected by a spelling checking routine and/or a routine that selects

synonyms of received spellings, [Column 11, Lines 54-55]. *The search engine may*

confidently add the spelling "Lincoln" to the dictionary file and omit the spelling "Lincon"

from the dictionary file, [Column 11, Lines 62-65]. *It is quite inherent that later searches*

with similar input query would then also be compared with the newly updated dictionary file).

Toner discloses the data field is from a record (*Users select whether they wish to use a single Suspect name at a time, manually entered by the keyboard, or to use an existing file containing a list of Suspect names*, [0094]).

It would have been obvious to an ordinary person skilled in the art at the time of the invention was made to incorporate the teachings of Toner with the teachings of Borkovsky, for the purpose of resolving variations in spellings and representations for names with foreign origins that may be spelt in any number of ways ([0015] of Toner).

Church discloses said at least one quality parameter takes into account writing variations that are evaluated based on differences in the value of the data field and the synonym candidate (*a second probability function, Pr(typo/correction), is also derived for each correction candidate and reflects the probability of occurrence of the particular typographical modification (i.e., deletion, insertion, reversal or substitution) used to generate the misspelled word from the candidate expression*, [Column 3, Lines 60-64]. *See further Table C in* [Column 4]).

It would have been obvious to an ordinary person skilled in the art at the time of the invention was made to incorporate the teachings of Church with the teachings of Borkovsky, as modified by Toner, for the purpose of correcting spelling errors in text wherein candidate expressions for replacing a misspelled word are assigned probability functions ([Abstract] of Church).

Regarding **claim 25,** Borkovsky further discloses a computer-readable record

medium having stored thereon computer-executable instructions for causing a computer

to perform a method for processing a synonym set to tolerate writing variation in input

data when searching counterparts in a reference data set for data records, a data field

representing an identifier, members of the synonym set being first identifier values and

referring to respective second identifier values, the second identifier values being

predetermined identifier values, and said searching for a counterpart involving

comparison of a value of the data field to the synonym set (*Figure 10*), the method

comprising the steps of

determining, by a processor, among the predetermined identifier values at least

one synonym candidate relating to the value of the data field (*In block 702, a set of*

candidate alternative spellings is established. For example, the set of candidate

alternative spellings may include spellings that were selected by a spelling checking

routine and/or a routine that selects synonyms of received spellings. The set of

candidate alternative spellings may include spellings that were determined, based on a

set of rules and other determinations such as those described above, to be alternative

spellings that could be presented to a user, [Column 4, Lines 2-11])), and

if the value of the data field and a synonym candidate fulfill a predetermined

synonym acceptance criterion based on at least one quality parameter (*In block 306,*

based on a set of one or more rules that weigh the frequency of occurrences of files that

contain the particular spelling against the frequency of occurrences of files that contain

the alternative spelling, it is determined whether to present the alternative spelling to a

user, [Column 6, Lines 36-45]), automatically adding before searching for a counterpart

for a data record from the synonym set the value of the data field to the synonym set in

the computer readable database as a member referring to the synonym candidate

without intervention of a user (*the set of candidate alternative spellings may include*

spellings that were selected by a spelling checking routine and/or a routine that selects

synonyms of received spellings, [Column 11, Lines 54-55]. *The search engine may*

confidently add the spelling "Lincoln" to the dictionary file and omit the spelling "Lincon"

from the dictionary file, [Column 11, Lines 62-65]),

    Toner discloses the data field is from a record (*Users select whether they wish to*

use a single Suspect name at a time, manually entered by the keyboard, or to use an

existing file containing a list of Suspect names, [0094]).

    It would have been obvious to an ordinary person skilled in the art at the time of

the invention was made to incorporate the teachings of Toner with the teachings of

Borkovsky for the purpose of resolving variations in spellings and representations for

names with foreign origins that may be spelt in any number of ways ([0015] of Toner).

    Church discloses said at least one quality parameter takes into account writing

variations that are evaluated based on differences in the value of the data field and the

synonym candidate (*a second probability function, Pr(typo/correction), is also derived*

for each correction candidate and reflects the probability of occurrence of the particular

typographical modification (i.e., deletion, insertion, reversal or substitution) used to

generate the misspelled word from the candidate expression, [Column 3, Lines 60-64].

See further Table C in [Column 4]).

It would have been obvious to an ordinary person skilled in the art at the time of

the invention was made to incorporate the teachings of <u>Church</u> with the teachings of

<u>Borkovsky</u>, as modified by <u>Toner</u>, for the purpose of correcting spelling errors in text

wherein candidate expressions for replacing a misspelled word are assigned probability

functions ([Abstract] of <u>Church</u>).

Regarding **claim 26**, <u>Borkovsky</u> clearly shows and discloses a data processing

system comprising a processor for tolerating writing variations in input data when

processing data records for finding counterparts in a reference data set (*Figure 10*), the

system comprising:

memory means for storing the reference data set, means for storing

predetermined identifier values for an identifier, means for determining values of a data

filed, the data field representing the identifier (*Figure 10*),

means for associating values of the field and respective predetermined identifier

values as synonyms, said means configured to determine from the predetermined

identifier values at least one synonym candidate for a value of the data field (*In block*

702, a set of candidate alternative spellings is established. For example, the set of

candidate alternative spellings may include spellings that were selected by a spelling

checking routine and/or a routine that selects synonyms of received spellings. The set

of candidate alternative spellings may include spellings that were determined, based on

a set of rules and other determinations such as those described above, to be alternative

spellings that could be presented to a user, [Column 4, Lines 2-11])), to determine if a

synonym candidate and the value of the data field fulfill a predetermined synonym

acceptance criterion (*In block 306, based on a set of one or more rules that weigh the*

frequency of occurrences of files that contain the particular spelling against the

frequency of occurrences of files that contain the alternative spelling, it is determined

whether to present the alternative spelling to a user, [Column 6, Lines 36-45]), and if the

predetermined synonym acceptance synonym is fulfilled, to associate the value of the

data field and the synonym candidate as synonyms and to automatically add the

synonym candidate to a synonym set representing known writing variations for the

identifier without intervention of a user before searching for a counterpart to provide an

updated synonym set (*the set of candidate alternative spellings may include spellings*

that were selected by a spelling checking routine and/or a routine that selects synonyms

of received spellings, [Column 11, Lines 54-55]. *The search engine may confidently add*

the spelling "Lincoln" to the dictionary file and omit the spelling "Lincon" from the

dictionary file, [Column 11, Lines 62-65]), and

means for searching counterparts in the reference data set for the data records

(*The alternative spelling may then be presented to the user who submitted the original*

request, to allow the user to perform a modified search based on the alternative

spelling, [Column 2, Lines 33-36]) by comparing to entries of the reference data set

values of data fields and/or said updated synonyms set (*the set of candidate alternative*

spellings may include spellings that were selected by a spelling checking routine and/or

a routine that selects synonyms of received spellings, [Column 11, Lines 54-55]. *The search engine may confidently add the spelling "Lincoln" to the dictionary file and omit the spelling "Lincon" from the dictionary file,* [Column 11, Lines 62-65]. *It is quite inherent that later searches with similar input query would then also be compared with the newly updated dictionary file*).

Toner discloses receiving record and the data field is from a record (*Users select whether they wish to use a single Suspect name at a time, manually entered by the keyboard, or to use an existing file containing a list of Suspect names,* [0094]).

It would have been obvious to an ordinary person skilled in the art at the time of the invention was made to incorporate the teachings of Toner with the teachings of Borkovsky for the purpose of resolving variations in spellings and representations for names with foreign origins that may be spelt in any number of ways ([0015] of Toner).

Church discloses said at least one quality parameter takes into account writing variations that are evaluated based on differences in the value of the data field and the synonym candidate (*a second probability function, Pr(typo/correction), is also derived for each correction candidate and reflects the probability of occurrence of the particular typographical modification (i.e., deletion, insertion, reversal or substitution) used to generate the misspelled word from the candidate expression,* [Column 3, Lines 60-64]. *See further Table C in* [Column 4]).

It would have been obvious to an ordinary person skilled in the art at the time of the invention was made to incorporate the teachings of Church with the teachings of

Borkovsky, as modified by Toner, for the purpose of correcting spelling errors in text

wherein candidate expressions for replacing a misspelled word are assigned probability

functions ([Abstract] of Church).

Regarding **claim 27**, Borkovsky further discloses:

means for storing a synonym set, members of said synonym set referring to

respective predetermined identifier values, wherein the means for associating values of

the data field and respective predetermined identifier values as synonyms are

configured to add to the synonym set a member referring to the synonym associated

with the value of the data field before activation of the means for searching counterparts

(*the set of candidate alternative spellings may include spellings that were selected by a*

spelling checking routine and/or a routine that selects synonyms of received spellings,

[Column 11, Lines 54-55]. *The search engine may confidently add the spelling "Lincoln"*

to the dictionary file and omit the spelling "Lincon" from the dictionary file, [Column 11,

Lines 62-65]. *It is quite inherent that later searches with similar input query would then*

also be compared with the newly updated dictionary file).

Regarding **claim 28**, Borkovsky clearly shows and discloses a data processing

system comprising a processor to tolerate writing variation in input data when

processing a synonym set for searching counterparts in a reference data set for data

records, a data field representing an identifier, members of the synonym set being first

identifier values and referring to respective second identifier values, said second

identifier values being predetermined identifier values, and said searching involving

comparing a value of the data field to the synonym set (*Figure 10*), the system

comprising :

memory means for storing the synonym set, means for storing predetermined

identifier values for the identifier (*Figure 10*),

means for automatically adding to the synonym set a value of the data field and

respective predetermined identifier values associated as synonyms without intervention

of a user before searching for counterparts in the reference data set (*the set of*

candidate alternative spellings may include spellings that were selected by a spelling

checking routine and/or a routine that selects synonyms of received spellings, [Column

11, Lines 54-55]. *The search engine may confidently add the spelling "Lincoln" to the*

dictionary file and omit the spelling "Lincon" from the dictionary file, [Column 11, Lines

62-65]),

said means configured to determine from the predetermined identifier values at

least one synonym candidate for a value of the data field (*In block 702, a set of*

candidate alternative spellings is established. For example, the set of candidate

alternative spellings may include spellings that were selected by a spelling checking

routine and/or a routine that selects synonyms of received spellings. The set of

candidate alternative spellings may include spellings that were determined, based on a

set of rules and other determinations such as those described above, to be alternative

spellings that could be presented to a user, [Column 4, Lines 2-11])), to determine if a

synonym candidate and the value of the data field fulfill a predetermined synonym

acceptance criterion, and if the predetermined synonym acceptance criterion is fulfilled,

to associate the value of the data field and the synonym candidates as synonyms (*In*

block 306, based on a set of one or more rules that weigh the frequency of occurrences

of files that contain the particular spelling against the frequency of occurrences of files

that contain the alternative spelling, it is determined whether to present the alternative

spelling to a user, [Column 6, Lines 36-45]).

Toner discloses receiving record and the data field is from a record (*Users select*

whether they wish to use a single Suspect name at a time, manually entered by the

keyboard, or to use an existing file containing a list of Suspect names, [0094]).

It would have been obvious to an ordinary person skilled in the art at the time of

the invention was made to incorporate the teachings of Toner with the teachings of

Borkovsky for the purpose of resolving variations in spellings and representations for

names with foreign origins that may be spelt in any number of ways ([0015] of Toner).

Church discloses said at least one quality parameter takes into account writing

variations that are evaluated based on differences in the value of the data field and the

synonym candidate (*a second probability function, Pr(typo/correction), is also derived*

for each correction candidate and reflects the probability of occurrence of the particular

typographical modification (i.e., deletion, insertion, reversal or substitution) used to

generate the misspelled word from the candidate expression, [Column 3, Lines 60-64].

See further Table C in [Column 4]).

It would have been obvious to an ordinary person skilled in the art at the time of

the invention was made to incorporate the teachings of <u>Church</u> with the teachings of

<u>Borkovsky</u>, as modified by <u>Toner</u>, for the purpose of correcting spelling errors in text

wherein candidate expressions for replacing a misspelled word are assigned probability

functions ([Abstract] of <u>Church</u>).

Regarding **claim 29**, <u>Borkovsky</u> clearly shows and discloses a data processing

apparatus, comprising at least one processor configured to tolerate writing variations in

input data when processing data records for finding counterparts in a reference data set

(*Figure 10*),

to determine values of a data field, the data field representing an identifier (*In

block 102, a request is received. The request is to search for files that match a search

query. The request may be to search for files that contain several specific words*,

[Column 3, Lines 47-50]),

to associate values of the data field and respective predetermined identifier

values as synonyms,

to determine if a synonym candidate and the value of the data field fulfill a

predetermined synonym acceptance criterion based on at least one quality parameter,

and if the predetermined synonym acceptance criterion is fulfilled,

to associate the value of the data field and the synonym candidate as synonyms,

and to automatically add the value of the data field to the synonym set to provide an

updated a synonym without intervention of a user before searching for counterparts (*the*

set of candidate alternative spellings may include spellings that were selected by a

spelling checking routine and/or a routine that selects synonyms of received spellings,

[Column 11, Lines 54-55]. *The search engine may confidently add the spelling "Lincoln"*

to the dictionary file and omit the spelling "Lincon" from the dictionary file, [Column 11,

Lines 62-65]),

to store the updated synonym set (*The alternative spelling may then be*

presented to the user who submitted the original request, to allow the user to perform a

modified search based on the alternative spelling, [Column 2, Lines 33-36]), and to

search the counterparts in the reference data set for the data records by comparing the

data records to entries of the reference data set values of data fields and/or said

updated synonym set (*the set of candidate alternative spellings may include spellings*

that were selected by a spelling checking routine and/or a routine that selects synonyms

of received spellings, [Column 11, Lines 54-55]. *The search engine may confidently add*

the spelling "Lincoln" to the dictionary file and omit the spelling "Lincon" from the

dictionary file, [Column 11, Lines 62-65]. *It is quite inherent that later searches with*

similar input query would then also be compared with the newly updated dictionary file).

Toner discloses the data field is from a record (*Users select whether they wish to*

use a single Suspect name at a time, manually entered by the keyboard, or to use an

existing file containing a list of Suspect names, [0094]).

It would have been obvious to an ordinary person skilled in the art at the time of

the invention was made to incorporate the teachings of Toner with the teachings of

Borkovsky for the purpose of resolving variations in spellings and representations for names with foreign origins that may be spelt in any number of ways ([0015] of Toner).

Church discloses said at least one quality parameter takes into account writing variations that are evaluated based on differences in the value of the data field and the synonym candidate (*a second probability function, Pr(typo/correction), is also derived for each correction candidate and reflects the probability of occurrence of the particular typographical modification (i.e., deletion, insertion, reversal or substitution) used to generate the misspelled word from the candidate expression*, [Column 3, Lines 60-64]. *See further Table C in* [Column 4]).

It would have been obvious to an ordinary person skilled in the art at the time of the invention was made to incorporate the teachings of Church with the teachings of Borkovsky, as modified by Toner, for the purpose of correcting spelling errors in text wherein candidate expressions for replacing a misspelled word are assigned probability functions ([Abstract] of Church).

Regarding **claim 30**, Borkovsky further discloses members of said synonym set referring to respective predetermined identifier values, and wherein the at least one processor is configured to add to the synonym set stored in the at least one memory a member referring to the synonym associated with the value of the data field before activation of the search for counterparts (*the set of candidate alternative spellings may include spellings that were selected by a spelling checking routine and/or a routine that selects synonyms of received spellings*, [Column 11, Lines 54-55]. *The search engine*

may confidently add the spelling "Lincoln" to the dictionary file and omit the spelling

"Lincon" from the dictionary file, [Column 11, Lines 62-65]. *It is quite inherent that later*

searches with similar input query would then also be compared with the newly updated

dictionary file).

Regarding **claim 31**, <u>Borkovsky</u> clearly discloses a data processing apparatus

comprising a processor (*Figure 10*) configured

to determine if a synonym candidate and the value of the data field fulfill a

predetermined synonym acceptance criterion (*In block 306, based on a set of one or*

more rules that weigh the frequency of occurrences of files that contain the particular

spelling against the frequency of occurrences of files that contain the alternative

spelling, it is determined whether to present the alternative spelling to a user, [Column

6, Lines 36-45]), and

if the predetermined synonym acceptance criterion is fulfilled, to associate the

value of the data field and the synonym candidate as synonyms, and to automatically

add to a synonym set representing known writing variations for the identifier stored in a

memory a value of the data field and respective predetermined identifier values

associated as synonyms without intervention of a user to update the synonym set

before input into a searching system (*the set of candidate alternative spellings may*

include spellings that were selected by a spelling checking routine and/or a routine that

selects synonyms of received spellings, [Column 11, Lines 54-55]. *The search engine*

may confidently add the spelling "Lincoln" to the dictionary file and omit the spelling

"Lincon" from the dictionary file, [Column 11, Lines 62-65]) configured to search for

counterparts in the reference data set by comparing a value of the data field to the

updated synonym set (*the set of candidate alternative spellings may include spellings*

that were selected by a spelling checking routine and/or a routine that selects synonyms

of received spellings, [Column 11, Lines 54-55]. *The search engine may confidently add*

the spelling "Lincoln" to the dictionary file and omit the spelling "Lincon" from the

dictionary file, [Column 11, Lines 62-65]. *It is quite inherent that later searches with*

similar input query would then also be compared with the newly updated dictionary file).

    Toner discloses the data field is from a record (*Users select whether they wish to*

use a single Suspect name at a time, manually entered by the keyboard, or to use an

existing file containing a list of Suspect names, [0094]).

    It would have been obvious to an ordinary person skilled in the art at the time of

the invention was made to incorporate the teachings of Toner with the teachings of

Borkovsky for the purpose of resolving variations in spellings and representations for

names with foreign origins that may be spelt in any number of ways ([0015] of Toner).

    Church discloses said at least one quality parameter takes into account writing

variations that are evaluated based on differences in the value of the data field and the

synonym candidate (*a second probability function, Pr(typo/correction), is also derived*

for each correction candidate and reflects the probability of occurrence of the particular

typographical modification (i.e., deletion, insertion, reversal or substitution) used to

generate the misspelled word from the candidate expression, [Column 3, Lines 60-64].

See further Table C in [Column 4]).

It would have been obvious to an ordinary person skilled in the art at the time of the invention was made to incorporate the teachings of <u>Church</u> with the teachings of <u>Borkovsky</u>, as modified by <u>Toner</u>, for the purpose of correcting spelling errors in text wherein candidate expressions for replacing a misspelled word are assigned probability functions ([Abstract] of <u>Church</u>).

9.   **Claim 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over <u>Borkovsky et al.</u> *(Pat. No. US 7,440,941, filed on February 10,* 2003; *hereinafter* <u>*Borkovsky*</u>) in view of <u>Toner et al.</u> (*Pub. No. US 2004/0024760, filed on July 31, 2002; hereinafter* <u>*Toner*</u>), and further in view of <u>Church</u> (*Pat. No. US 5,572,423, published on November 5, 1996*), and further in view of <u>Bellany et al.</u> (*Pub. No. US 2002/0078024, filed on October 12, 2001; hereinafter* <u>*Bellany*</u>).

Regarding **claim 8**, <u>Borkovsky</u>, as modified by <u>Toner</u> and <u>Church</u>, does not disclose the number of changes required for converting the value of the data field to be identical to a synonym candidate is calculated using the Levenshtein distance.

However, <u>Bellany</u> discloses the number of changes required for converting the value of the data field to be identical to a synonym candidate is calculated using the Levenshtein distance (*on not finding any entries in the dictionary identical to the input data, the processor may then search allowing for one error at first, and if that search*

fails, performing a further search, allowing for two errors, and so on. A single error may

be counted if the search term and the dictionary entry differ by one character being

deleted, added or replaced with a different character. The quality of correspondence

between two terms may be judged by calculating the " Levenshtein" distance between

the two strings, [0044]).

It would have been obvious to a person with ordinary skills in the art at the time

of the invention to incorporate the teachings of Bellany with the teachings of Borkovsky,

as modified by Toner and Church, for the purpose of retrieving a desired postal address

from a plurality of postal addresses by searching a dictionary for entries in the dictionary

corresponding to the searched terms ([Abstract] of Bellany).

10.   **Claims 10-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over

Borkovsky et al. *(Pat. No. US 7,440,941, filed on February 10,* 2003; *hereinafter*

Borkovsky) in view of Toner et al. (*Pub. No. US 2004/0024760, filed on July 31, 2002;*

hereinafter Toner), and further in view of Church (*Pat. No. US 5,572,423, published on*

November 5, 1996), and further in view of Murakami et al. (*Pub. No. US 2004/0181759,*

filed on July, 19, 2002; hereinafter Murakami).

Regarding **claim 10**, Borkovsky, as modified by Toner and Church, does not

explicitly disclose a first quality parameter is evaluated for each synonym candidate and

at least a second quality parameter is evaluated at least for the synonym candidate(s)

having the best first quality parameter.

However, <u>Murakami</u> further discloses a first quality parameter is evaluated for each synonym candidate and at least a second quality parameter is evaluated at least for the synonym candidate(s) having the best first quality parameter (*generating a first set of candidate synonyms for the object word, based on whole of the document data and generating at least one second set of candidate synonyms for the object word, based on at least one part of the document data and narrowing the candidate synonyms contained in the first set using the candidate synonyms contained in the second set,* [0016]).

It would have been obvious to a person with ordinary skills in the art at the time of the invention to incorporate the teachings of <u>Murakami</u> with the teachings of <u>Borkovsky</u>, as modified by <u>Toner</u> and <u>Church</u>, for the purpose of generating the candidate synonyms more efficiently by handling all abbreviations and peculiar terms including misspelled or misconverted words ([0015] of <u>Murakami</u>).

Regarding **claim 11**, <u>Murakami</u> further discloses the synonym acceptance criterion requires that there is only one synonym candidate having the best at least one quality parameter (*Table 1 shows that the firstly ranked candidate "batt" has the highest degree of relatedness*, [0055]).

Regarding **claim 12**, <u>Murakami</u> further discloses a method, wherein at least two quality parameters are evaluated for each synonym candidate and the synonym candidate acceptance criterion specifies a threshold for one of the at least two quality parameters, the threshold being dependent on a further one of the at least two quality

parameters (*generating a first set of candidate synonyms for the object word, based on whole of the document data and generating at least one second set of candidate synonyms for the object word, based on at least one part of the document data and narrowing the candidate synonyms contained in the first set using the candidate synonyms contained in the second set, [0016] Candidate synonyms of the first set can be narrowed with the candidate synonyms of the second sets similarly to the aforementioned method. In this case, the candidates which are ranked in places equal to or higher than a threshold value place in the second sets are evaluated to be "absolute." The candidate synonyms evaluated to be "absolute" are almost regarded as synonyms, [0021]*).

Conclusion

11.   These following prior arts made of record and not relied upon are considered pertinent to Applicant's disclosure:

Hower et al. (*Pub. No. US 2002/0010639*) teaches computer-based interpretation and location system.

Hatakeyama et al. (*Pat. No. US 5,220,625*) teaches information search terminal and system.

The Examiner requests, in response to this Office action, support(s) must be shown for language added to any original claims on amendment and any new claims. That is, indicate support for newly added claim language by specifically pointing to

page(s) and line no(s) in the specification and/or drawing figure(s). This will assist the

Examiner in prosecuting the application.

When responding to this office action, Applicant is advised to clearly point out the

patentable novelty which he or she thinks the claims present, in view of the state of the

art disclosed by the references cited or the objections made. He or she must also show

how the amendments avoid such references or objections See 37 CFR 1.111(c).

Contact Information

12.   Any inquiry concerning this communication or earlier communications from the

Examiner should be directed to Son T. Hoang whose telephone number is (571) 270-

1752. The Examiner can normally be reached on Monday – Friday (7:00 AM – 4:00

PM).

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's

supervisor, Neveen Abel-Jalil can be reached on (571) 272-4074. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for published

applications may be obtained from either Private PAIR or Public PAIR. Status

information for unpublished applications is available through Private PAIR only. For

more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO

Customer Service Representative or access to the automated information system, call

800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. T. H./
Examiner, Art Unit 2165
December 8, 2009

/Neveen Abel-Jalil/
Supervisory Patent Examiner, Art Unit 2165